

REMARKS/ARGUMENTS

Favorable reconsideration of this application, in light of the following discussion, is respectfully requested.

Claims 1, 3, 5, 10, 12, 14 and 15 are pending.

In the Official Action, Claims 1 and 3 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0036377, now U.S. Patent 6,824,131, hereinafter Togashi in view of website <http://www.sdplastics.com/polyeth.html> (dated January 21, 1997, hereinafter SDPLASTICS); Claims 1 and 5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Togashi in view of the article entitled “Application of Engineering Plastic Materials to Office Automation and Audio-Visual Appliances in Japan” (hereinafter Yasufuku); Claims 10 and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Togashi and Yasufuku in view of website <http://www.craftechind.com/material.htm> (dated January 20, 1998, hereinafter CRAFTECHIND); Claims 10 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Togashi and Yasufuku in view of website <http://www.tplast.ee/plast10en.php> (dated August 27, 2002, hereinafter TPLAST); and Claims 10 and 15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Togashi and Yasufuku in view of website http://www.polymerplastics.com/performance_vespe1.shtml (dated August 16, 2000, hereinafter VESPEL).

Claim 1 is directed to an image forming apparatus having a tilt member opposing a sheet feed roller. The tilt member includes a tilt member main body, a contact face in direct contact with the sheet feed roller, and a tilt face in contact with an edge of the uppermost sheet. The tilt face and the contact face are made of a first material consisting of one of polyethylene (PE), and polybutylene terephthalate (PBT). The tilt member main body is made of a second material different from the first material.

In paragraph [0023] of Applicant's published application, there is described a first embodiment where the whole tilt member 56 is a) formed from polybutylene terephthalate (PBT) or polyethylene (PE), *or* b) where *only* the tilt face 56a and a contact face 56b portions of the tilt member 56 that are in contact with the sheet feed roller 54 are formed from PBT or PE (i.e., while the remainder of the tilt body is made of another material.)

In Togashi, the tilt member 6, including the contact face, is integrally molded of a synthetic resin.¹ In at least the third through fifth embodiments of Togashi, the contact face of the integrally molded tilt member is covered by a metal plate or carbon/glass fiber reinforced hard synthetic resin and in contact with a sheet feed roller.²

Because the contact face of the third through fifth embodiments of Togashi is covered with a metal cover, this contact face is not in direct contact with the sheet roller as recited in Applicant's Claim 1. Thus, the third through fifth embodiments of Togashi are not equivalent to the claimed invention. However, in at least the first and second embodiments of Togashi, the contact face is not covered by a metal plate and is in direct contact with the sheet roller. Thus, the question regarding Claim 1 is whether the first and second embodiments of Togashi which do disclose a contact face in direct contact with a sheet roller also disclose or suggest a tilt face and the contact face that are made of a first material consisting of one of polyethylene (PE), and polybutylene terephthalate (PBT), while *the tilt member main body* is made of a second material different from the first material. A review of Togashi reveals that the first and second embodiments of Togashi do not disclose or suggest the invention of Claim 1. That is, Togashi is explicit that the tilt member 6, including

¹ Togashi, column 2, line 64 – column 3, line 4: "In the sheet feeder configured as described above, since the tilt member 6 has a complicated shape, it is preferable that the tilt member 6 is integrally molded of a synthetic resin."

² In the sheet feeder described above, the tilt member preferably has a contact face, the length of which is smaller than an axial length of the sheet feed roller, and more preferably is formed of a synthetic resin and includes a metal plate for covering at least the contact face with the sheet feed roller. The metal plate is preferably elastic. The elastic metal plate may be mounted from the tilt face so as to surround the tilt member on both upper and lower sides.

the contact face, is *integrally molded* of a synthetic resin. Because of the integrally molding, the tilt member of the first and second embodiments of Togashi does not include a tilt face and the contact face that are made of a first material consisting of one of polyethylene (PE), and polybutylene terephthalate (PBT), while *the tilt member main body* is made of a second material different from the first material.

Indeed, not only does Togashi fail to disclose or suggest a tilt member main body is made of a second material different from a first material, but Togashi *explicitly teaches away* from this feature. That is, all of the embodiments of Togashi require that the component in question be *integrally molded*. Upon reading Togashi, one skilled in the art would not be motivated to replace the integrally molded tilt member, with Applicants' claimed construction. On the contrary, upon reading Togashi, one skilled in the art would be motivated to consider various integrally molded solutions.

For at least the foregoing reasons, Togashi does not disclose or suggest an apparatus where a contact face is made up of one synthetic material and a tilt face is made by another synthetic material as recited in amended Claim 1.

Claim 10 is directed to an image forming apparatus having a tilt member opposing a sheet feed roller. The tilt member includes a tilt part, and a support part. The tilt part includes a contact face in direct contact with the sheet feed roller, and a tilt face in contact with an edge of the uppermost sheet. The tilt part comprises a first material consisting of one of poly-ether-ether-ketone (PEEK), and polyimide (PI), and an alloy that includes polyimide (PAI). The support part includes a second material different from the first material. The second material consists of one of ABS resin, polyacetal (POM), polybutylene terephthalate (PBT), and polycarbonate (PC).

In a second embodiment described in paragraph [0047], the tilt member 66 includes a tilt part 67 and a support part 68. The tilt part 67 includes a tilt face 67a where the sheet

contacts the tilt part 67 and a contact face 67b contacting the sheet feed roller 54. The tilt part 67 is formed from a metal or other high durability material. For example, the tilt part 67 is formed from poly-ether-ether-ketone (PEEK), polyimide (PI), or an alloy that includes polyimide (PAI). The tilt member 66 also includes a support member 68 that may be formed of the same material as the tilt part 67 *or may be formed from a lower-cost material*, for example, ABS resin, polyacetal (POM), polybutylene terephthalate (PBT), or polycarbonate (PC).

For at least the reasons presented above relative to Claim 1, Togashi also does not disclose or suggest an apparatus having tilt member including a tilt part and a support part each made up of different synthetic materials as recited in Claim 10.

The Official Action points to the third through fifth embodiments of Togashi for a supposed disclosure of the dual-material construction recited in Claims 1 and 10. Applicants traverse. Indeed, Togashi does disclose using first and second materials. However, while the first material of Togashi is an unspecified synthetic material, the second material is a metal. Thus, Togashi does not disclose or suggest using two different synthetic materials as recited in independent Claim 10. Applicant's claimed multi-synthetic material device has superior abrasion resistance and manufacturing cost advantages. Furthermore, as noted above relative to Claim 1, the third through fifth embodiments of Togashi require the use of a contact face metal cover. Thus, the third through fifth embodiments of Togashi do not disclose or suggest Applicants' claimed synthetic contact face *in direct contact with a sheet roller*. Indeed, because of manufacturing costs and performance issues associated with a) the integrally molded tilt member; and b) an integrally molded tilt member with a contact face metal cover, the inventors experimented and discovered a novel and useful alternative to the structures of Togashi. That is, with Applicants' claimed dual material structures having a synthetic material in direct contact with the sheet roller, the claimed invention has improved costs and

performance over the integrally molded tilt member without a contact face metal cover, without the costs and complexity of an integrally molded tilt member having a contact face metal cover.

SDPLASTICS describes various properties of polyethelyene (PE), including abrasion resistance. CRAFTECHIND describes Torlon® as a polyamide-imide (PAI) that possesses a combination of great mechanical strength, the ability to withstand radiation, usability from approximately -300°F to 500°F, and resistance to most chemicals at room temperature. CRAFTECHIND also discusses PE and PEEK. TPLAST describes polyetheretherketone PEEK as having great mechanical strength, stiffness and solidity, a very high allowed working temperature (250...310 °C), creep limit and abrasion resistance. VESPEL describes a high-performance polyimide (PI) resin as having outstanding creep, abrasion resistance, and strength under adverse conditions. Yasufuku discloses that PBT has a superior surface hardness property.

Applicant submits that SDPLASTICS, CRAFTECHIND, TPLAST, VESPEL, and Yasufuku also does not cure the deficiencies of Togashi because each of these references fail to disclose or suggest the multi-material structures recited in Claims 1 and 10.

MPEP §706.02(j) notes that to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Also, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on Applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir.1991). Without addressing the first two prongs of the test of

obviousness, Applicant submits that the applied references each fail to disclose all the features of Applicant's claimed invention.

Also, assuming *arguendo* the assertion of *prima facie* obviousness is proper, Applicant points to MPEP 2144.08(II)(B) ("Obviousness of Species When Prior Art Teaches Genus") which recites that if a *prima facie* case of obviousness is established, the burden shifts to the applicant to come forward with arguments and/or evidence to rebut the *prima facie* case. See, e.g., *Dillon*, 919 F.2d at 692, 16 USPQ2d at 1901. Rebuttal evidence and arguments can be presented in the specification, *In re Soni*, 54 F.3d 746, 750, 34 USPQ2d 1684, 1687 (Fed. Cir. 1995), by counsel, *In re Chu*, 66 F.3d 292, 299, 36 USPQ2d 1089, 1094-95 (Fed. Cir. 1995), or by way of an affidavit or declaration under 37 C.F.R. 1.132, e.g., *Soni*, 54 F.3d at 750, 34 USPQ2d at 1687; *In re Piasecki*, 745 F.2d 1468, 1474, 223 USPQ 785, 789-90 (Fed. Cir. 1984). Here, Applicant rebuts any current or future assertion of *prima facie* obviousness in view of Applicant's originally filed specification which documents the results of extensive experimentation that showed the claimed materials provided unexpected results.³

MPEP 2144.08 describes that rebuttal evidence may include evidence that the claimed invention yields unexpectedly improved properties or properties not present in the prior art. Here, as discussed below, it is only through Applicant's extensive experimentation that the benefits of the claimed multi-material construction, as compared to other synthetic resins and integrally molded devices, were identified. That is, in an experiment documented in Applicant's specification and related to the invention recited in Claim 1, it was shown that a tilt face and contact face formed from PE or PBT demonstrated superior wear resistance because faces made of these materials did not fall bellow the non-feed line L until about 110,000 sheets have been printed. In contrast, faces formed from PC did not demonstrate

³ Specification, paragraphs 24-26 and Figure 5; see also paragraphs 36-37 and Figure 9.

good wear resistance as the tilt member fell below the non-feed line when about 10,000 sheets were printed. Therefore, experimental results showed that superior performance is achieved if at least the tilt face 56a and the contact face 56b are formed from PE or PBT.

In an experiment documented in Applicant's specification and related to the invention recited in Claim 10, it was shown that conditions were similar to the conditions of the previously discussed experiment except that the tilt member was formed from one of aluminum (Al), poly-ether-ether-ketone (PEEK), polyimide (PI), or an alloy that includes polyimide (PAI). In FIG. 9, the line B is the empirically determined non-feed line corresponding to 0.2 mm wear from the initial thickness. These experiments showed that a tilt member formed from the above-listed material has excellent wear resistance because the tilt member did not fall below the non-feed line until about 1,000,000 sheets. Therefore, these experiments show that the second embodiment has better wear resistant than the first embodiment and may be more cost-effective for use in tilt members in high-duty cycle, large sheet feed apparatus. In other embodiments demonstrating excellent wear resistance, a glass fiber or another material can be added to the PBT, PE, Metal, PEEK, or PI. In yet other embodiments, alloys that include PBT, PE, Metal, PEEK, or PI can also be used.

MPEP 2144.08 describes that a showing of unexpected results for a single member of a claimed subgenus, or a narrow portion of a claimed range would be sufficient to rebut a *prima facie* case of obviousness *if* a skilled artisan "could ascertain a trend in the exemplified data that would allow him to reasonably extend the probative value thereof." *In re Clemens*, 622 F.2d 1029, 1036, 206 USPQ 289, 296 (CCPA 1980) (Evidence of the unobviousness of a broad range can be proven by a narrower range when one skilled in the art could ascertain a trend that would allow him to reasonably extend the probative value thereof.). But see, *Grasselli*, 713 F.2d at 743, 218 USPQ at 778 (evidence of superior properties for sodium containing composition insufficient to establish the non-obviousness of broad claims for a

catalyst with "an alkali metal" where it was well known in the catalyst art that different alkali metals were not interchangeable and applicant had shown unexpected results only for sodium containing materials); *In re Greenfield*, 571 F.2d 1185, 1189, 197 USPQ 227, 230 (CCPA 1978) (evidence of superior properties in one species insufficient to establish the non-obviousness of a subgenus containing hundreds of compounds); *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972) (one test not sufficient where there was no adequate basis for concluding the other claimed compounds would behave the same way). However, an exemplary showing may be sufficient to establish a reasonable correlation between the showing and the entire scope of the claim, when viewed by a skilled artisan. See, e.g., *Chupp*, 816 F.2d at 646, 2 USPQ2d at 1439; *Clemens*, 622 F.2d at 1036, 206 USPQ at 296.

Here, Applicant's testing provides evidence of unexpected results of certain species of synthetic resin in multi-material components as compared to other species of synthetic resin in integrally molded components.⁴ More generally, Applicant's testing provides evidence of unexpected results of certain species of synthetic resin as compared to the genus of synthetic resins. Also, Applicant's testing provides evidence of manufacturing benefits (cost vs. long term wear) of devices where the contact face and tilt face are made of a specific (higher performance, more expensive) synthetic material, while the tilt member main body is made of another (lower cost) material. That is, because the tilt face and contact face are subject to abrasion, while the tilt member main body is not, it is advantageous to forego the integral molding taught by Togashi in favor of the multi-material construction recited in Claims 1 and 10.

Applicant acknowledges that MPEP 2144.08 also recites that evidence of an unexpected property may not be sufficient regardless of the scope of the showing. This is explained as follows: *Usually, a showing of unexpected results is sufficient to overcome a*

⁴ Specification, paragraphs 24-26 and Figure 5; see also paragraphs 36-37 and Figure 9.

prima facie case of obviousness. See, e.g., *In re Albrecht*, 514 F.2d 1389, 1396, 185 USPQ 585, 590 (CCPA 1975). However, where the claims are not limited to a particular use, and where the prior art provides other motivation to select a particular species or subgenus, a showing of a new use may not be sufficient to confer patentability. See *Dillon*, 919 F.2d at 692, 16 USPQ2d at 1900-01. Accordingly, each case should be evaluated individually based on the totality of the circumstances. Here, Applicant submits that the claimed invention *is* limited to a particular use (i.e., for a tilt device within an image reproduction device). Thus, Applicant submits that the previously described showing of unexpected results is sufficient to overcome any existing or future assertion of *prima facie* obviousness.

Accordingly, in light of the previous discussion, Applicant respectfully submits that the present application is in condition for allowance and respectfully request an early and favorable action to that effect.

Respectfully submitted,

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